

## BNL HOUSEKEEPING SUPPLY SUMMARY

1. The Dyna power housekeeping supply is an adaptation of the SCE BNL 440-111 housekeeping supply.
2. There were two versions of the Dyna power supplies. One had transformers primaries wound for 120VAC, the other for 208VAC. Except for transformer primaries, input fuse ratings and use of two solid state relays to handle the high input current for 110V, the two versions of the supply were identical.
3. The Dyna power supplies produced the same outputs as the SCE supplies, except as noted below.
4. All the SCE units are wired for 208VAC input. They produce the following voltages:
  - a. T401, This transformer is ALWAYS powered when unit is connected to AC power.
  - b. It produces:
    - +12V/1A to backplane for ALWAYS ON ANALOG circuitry.
    - +12V/100ma for RING security.
    - +5V/2A to backplane for ALWAYS ON DIGITAL circuitry.
  - c. T402 and T406 (These transformers are identical.) Primary power to these two is switched.
  - d. They EACH have an 18V winding and an 8V winding (original design.)
  - e. Thus it takes BOTH transformers to produce  $\pm 18V$ ,  $\pm 8V$ .
  - f. This was done to equalize the power drawn from each transformer.
  - g. The  $\pm 18V/2.5A$  is the main analog supply (non-isolated.)
  - h. The  $\pm 8V$  output powers the SCE current sensor. (In later versions, for the 300Amp supplies, this voltage was raised to  $\pm 12V$  with a change in the transformer turns and regulator circuitry.\*
  - i. Dynapower never used the  $\pm 8V$  for their current sensor. Therefore, on the Dynapower supplies, the  $\pm 8V$  (or  $\pm 12V$ ) winding on T402 and T406 was deleted, and regulator parts NOT stuffed.
  - j. T403 (auxiliary transformer) is a switched transformer that produces:
    - +5V/8A for logic.
    - $\pm 18V/1A$  for analog buffer amplifiers.
  - k. T404 and T405 are IDENTICAL in the Dynapower version. Both are switched. They (together) produce +15V/2A, -15V/1A and  $\pm 24V/1.2A$ .
  - l. The  $\pm 24V$  is used by Dynapower for their current sensor. The output current differences for  $\pm 15V$  (in line K) outputs is due to REGULATOR, not TRANSFORMER differences.
  - m. In the SCE version, T404, T405 are NOT identical. In these supplies, the transformers produce the isolated voltages needed to run the FET board regulators.
  - n. Late version (SCE Housekeeping supplies for BNL 470 units) produced +26V, AND -10VDC. (The asymmetrical voltages are due to voltage limitations on the FET transistor driver amplifiers.)

\*The  $\pm 12V$  current sensor output supplies would directly replace the  $\pm 8V$  supplies in an SCE 440/540 unit without modification. All late housekeeping supplies had the  $\pm 12V$  current sensor outputs.